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REMARKS

In the most recent Office action, taken by the patent Examiner on November 18, 2002, regarding the above-identified patent application, the Examiner (a) rejected all claims in the application on the bases of different applications of four prior art U.S. patent references under different applications of both 35 U.S.C. §102 and 35 U.S.C. §103, (b) observed that certain attachment documents (A and B) could not be found in the Patent Office file regarding this application, (c) raised a technical objection under 35 U.S.C. § 112 regarding the phrase "acceleration-rate-sensitive" as employed in the specification and claims, and (d) implemented a *provisional* obviousness-type double patenting rejection on the basis of co-pending U.S. patent applications Serial Numbers 10/156,398 and 10/156,374. The four cited and applied references are: Dieckhaus, 6,195,917, Baychar, 6,048,810, Koh et al., 5,946,825, and Larson, 4,006,542.

Applicants have carefully reviewed the Examiner's observations, technical objection, and prior-art actions, the cited and applied references, and the specification, claims, abstract and drawings in the instant application, and by the present Amendment offer responses, and propose new claims 4,5 and 6, in light of cancellation, without prejudice, of claims 1-3, inclusive, in an effort to narrow the issues for consideration, and to make clear why Applicants' claimed invention, as now expressed in the three new claims (after entry of this Amendment) is plainly distinguishable over the cited and applied art of record, and is therefore patentable.

As a part of this responsive action, Applicants submit herewith fresh copies of specification-attachment Documents A and B, and also point out, with respect to the Examiner's objection to the claims under 35 U.S.C. §112, how the term "acceleration-rate-sensitive", as employed in the claims, is defined within the text of the specification as filed. Additionally,

Applicants indicate how the meaning of this phrase is clearly understood by those of general skill in the relevant art, by including with this responsive Amendment three summary, abstracted pages from scholarly technical material available generally on the Internet describing the fundamental thinking behind the term "acceleration-rate-sensitive" (equivalent to strain-rate-sensitive) as such is employed by Applicants herein.

Dealing first of all with the *provisional* implementation of the mentioned judicially created double patenting doctrine, Applicants, who are in control of the respective prosecutions of the two Examiner-asserted co-pending patent applications, have abandoned those applications. As a consequence, the "doctrine relationship" to the instant application clearly becomes a moot issue.

Dealing next with the language-phrase technical issue raised by the Examiner, and as was mentioned above herein, accompanying this responsive Amendment are three pages of scholarly technical extracts collected from technical materials made widely available over the Internet in the field of physics, describing the physics and mathematical underpinnings of Applicants' claim and specification phrase "acceleration-rate-sensitive". Applicants' specification, at page 3, lines 6-10, inclusive, provides a self-contained, internal definition of this term, which definition is based upon, and is entirely consistent with, the prior art teachings and knowledge expressed in the accompanying three Internet-acquired pages describing certain dynamic aspects of the well-known and often referred to physical phenomena called "strain" and "strain rate".

Acceleration-rate-sensitivity is based upon strain-rate-sensitivity, and as the accompanying enclosed informative material points out, certain materials respond to the rate of application of strain (which is a full analogy to the rate of acceleration/deceleration associated with a resisted, shock-applied force that is applied to a material), by responding quite *differentially* in

relation to the acceleration (deceleration) rate, or strain rate, of such an applied shock event. There is an inverse relationship between the rate of induced strain, or the rate of shock-applied acceleration/deceleration, and the response resistance which is mounted in relation to that event. This relationship is one wherein higher acceleration and strain rates are resisted more stridently than are more slowly applied similar events which are responded to more yieldingly, or fluidly.

The presence and use of a material, in Applicants' insole invention, of material which gives the entire structure the quality of being an acceleration-rate-sensitive structure is a very important physical component of the present invention. This phenomenon is to be distinguished from the phenomenon referred to as "slow return". Slow return terminology refers to the manner in which a material *returns* from a deformed state to an undeformed state, and not how it *reacts at the moment of an impact*. Applicants' viscoelastic material does indeed *return* in a manner which demonstrates a slow-return response, but additionally, it reacts to *initial* application of a deforming event with "acceleration-rate-sensitivity". These two, different phenomena are brought into important cooperation (along with other features) in Applicants' invention.

Cooperating significantly with cushioning layer 12 in Applicants' invention is fabric overlayer 14 which, in addition to furnishing useful abrasion resistance and low fractioning qualities, significantly contributes to the shock absorbing behavior of the insole structure as a whole by, in fact, enhancing the performance of the underlying cushioning layer.

A singular cushioning layer fabricated from material having the acceleration-rate-sensitivity and viscoelastic, non-springy, return-from-deformation operational and structural characteristics ascribed to it, is, in fact, a highly directionally sensitive material owing to the nature of its internal molecular structure. As is well understood, this internal structure has what can be

thought of as a kind of columnar directionality which, when aligned with the direction of a shock applied force, offers maximum cushioning response having the performance characteristics discussed so far herein. This material is, according to conventional thinking, best employed in an unaltered and unadulterated situation where it operates as a kind of stand-alone material unencumbered by attachment or interconnection to other materials which are perceived to detract from its designed "columnar-like" load-cushioning forte.

It is, thus, generally perceived to be best employed as a stand-alone and individual cushioning component, unencumbered by any attachments, particularly attachments existing at the intended shock-reception surface of the material.

New Matter

Applicants recognition in the creation of the present invention is that, contrary to expectation, by load-transmissively attaching a fibre-containing fabric material, such as that which is described for layer 14 herein, the cushioning response of the underlying layer 12 is actually appreciably enhanced by the fact, apparently, that laterally telegraphed and transmitted force resulting from a localized shock impact event actually draws in supportive columnar-like response from adjacent layer-12 material. In other words, rather than detracting from performance, such lateral load distributing and telegraphing actually improves performance both in the sense of retarding time after impact to peak or maximum G-force acceleration/deceleration – a very significant factor in relation to minimizing injury, but also in the sense of improving the desired anti-spring-back behavior in the return-from-deformation period of response to a shock-applied load.

Even more surprising is the further very significant fact that the moisture-wicking structure and functionality of layer 14 additionally contributes significantly to the shock absorbing

behavior of layer 12. It was very apparent to Applicants at the time that the invention was created that the addition of layer 14 to form a cooperative combination with layer 12 significantly enhanced shock absorbing behavior of the combined structure, and much experience now with this combined structure has revealed that the ability and propensity of layer 14 to wick moisture, and to make such moisture available to the somewhat porous structure of the underlying cushioning layer 12, creates a situation wherein moisture so wicked and made available and drawn into the structure of layer 12 dramatically enhances that layer's ability to extend/retard the time between the occurrence of a shock event and the occurrence of peak G-force acceleration/deceleration – an extremely important consideration in relation to minimizing impact injury.

This appears to be the crux of his invention. It was not discussed originally in the spec. but they discovered this later on.

This significantly enhanced performance resulting from the combination of layers proposed by the present invention, clearly observed at the time of creation of the invention, is based upon several mechanisms whose workings are now more clearly understood, and specifically whose workings are plainly documented in a number of carefully performed, independent laboratory tests to assess behavior mechanism and parameters that affect the achievable benefits derivable from such mechanism.

Nothing like this is found or suggested in any known art or in the art made of record and considered and applied by the Examiner in this case.

In preparing to generate this response to the Examiner's recent action taken regarding the claims of this case, Applicants have come across some additional patent literature which is tangentially related to the general field of this invention, and that patent literature is now copied to the Examiner and listed in the accompanying supplemental Information Disclosure Statement. Additionally, and as a part of preparing this responsive of Amendment, Applicants

have further reviewed commercial literature relative to the isolated and unmodified cushioning material and related families of material associated with layer 12 in the invention, and provide, also as a part of the supplemental Information Disclosure Statement herein, a listing and copies of several commercial advertising materials that are associated with the specific material which Applicants chose to combine with fabric layer 14 in the creation of their invention. Some of the materials referred to in this additional commercial literature are indeed slow-return materials, but not ones which perform with the acceleration-rate-sensitivity called for in Applicants' claims, and present in Applicants' invention. Others of these materials refer (date of reference unknown) to an isolated material which is like that employed by Applicants, but not presented in any way suggesting that any combination with any other material could perform shock-management enhancements like those that are achieved by the special combination of two materials proposed by Applicants insole structure, and set forth now clearly in Applicants' claims.

With all of the above in mind, it should be clear that the art cited and applied by the Examiner does not, and cannot, render Applicants' claims unpatentable, either as being anticipated by anything shown in those references, or as being made obvious by anything suggested by those references, in any combination.

Significantly, there is completely lacking from the teachings of all four of the cited and applied prior art references any teaching or suggestion relating to an enhanced material combination which possesses and demonstrates acceleration-rate-sensitivity in relation to a shock-applied force, enhanced by the cooperative behavior of a lateral-load-distributing and moisture-wicking fabric. This is a very large missing piece in the cited art. Most especially there is nothing in the known and/or cited art which shows or suggests the very special, non-intuitive and surprising

combination of the two layers proposed by Applicants, wherein a lateral-load-distributing, moisture-wicking fabric layer, joined to the impact (upper) surface of an underlying acceleration-rate-sensitive, viscoelastic cushioning layer, synergizes with that underlayer to employ lateral-load-telegraphing and enhanced moisture-wicking to improve significantly, rather than to degrade, the shock-handling capability of the underlayer, and thus of the two-layer combination as a whole.

Given this significant deficiency in the art, Applicants respectfully urge that their claims, as now presented in this application, on the basis of entry of this Amendment, are clearly distinguishable from the known art and the art of record, and are therefore patentable.

In light of the foregoing amendment and remarks, the Examiner is respectfully requested to reconsider the rejections and objections state in the Office action, and pass the application to allowance. If the Examiner has any questions regarding the amendment or remarks, the Examiner is invited to contact Attorney-of-Record Jon M. Dickinson, Esq., at 503-504-2271.